

## The Bosque at Pará

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This city of two hundred thousand people who live almost on the equator, has been quite literally rescued from the jungle. The edge of the greatest rain-forest in the world still crowds in upon the edge of the town where a man may step outside his house into a hot steaming forest. Not in Rio de Janeiro, nor Bahia nor in Pernambuco is there this feeling that the forest all but submerges man's efforts to hold it in check, for the outskirts of these large Brazilian cities are fringed with immense plantations of cotton, tobacco, sugar, rice and cocoa.

But Pará is very different. Once the capital of the rubber world, and still the greatest seaport for Brazil-nuts, timber, many oils and resins, and the relic of the rubber debacle, its growth and prosperity were and are based upon the natural products of the Amazon. None, but guaraná and a trifling amount of cocoa, both native farther up the valley, are cultivated. And men's minds, in the old days were centered upon the vast wealth of the Amazonian forests, so that once the city was established little effort was made at agriculture and the forest was allowed to creep back to the very door yards of Pará.

Many years ago, long before the English took *Hevea brasiliensis* to the East where now ten times the amount of rubber is produced than comes from the wild trees of the Amazon, Pará set aside a square kilometer of its jungle as a public park,—The Bosque. All that was done now stands as a monument to the foresight of its creator, and a relic of the prosperity that may years hence come to Pará again. Fences, benches, an arbor or two and a few bridges, all of wood, are now in active decay. Algæ and mosses cover some of them, and fungi and constant moisture and insects will soon make an end of such structures as remain.

While this decay may be deplorable from the point of view of park management, the Bosque remains one of the most interesting parks in the world. Not a plant is labelled, but nowhere in Brazil can the ordinary visitor see tropical vegetation so easily. Getting through the virgin forest is a task requiring tremendous effort, and must be based upon relative

indifference to insects and sometimes the attentions of more formidable fauna. In the Bosque there is almost complete freedom from most of these discomforts and, of course perfect freedom from snakes.



Asiatic bamboo, one of the few exotic plants in the Bosque at Pará.

A series of irregular trails leads to all parts of the Bosque, but there are no wide roads through it which would destroy

the conditions of shade and moisture upon which the maintenance of the forest depends. Along a few of these trails a handful of exotics have been planted, mostly *Chrysalidocarpus lutescens*, various species of *Pandanus*, a *Codiaeum* or two, here and there the noble royal palm, and Asiatic bamboos. But the great bulk of the area is exactly what the conservationists pine for,—a piece of wild vegetation rescued from the wild and let alone.

As in the jungle the first thing that strikes one is the enormous number of species and the rarity of the trees, at least, that occur in any very definite stands. Easily the dominant tree is the sumauma as the Brazilians call the silk cotton tree (*Ceiba pentandra*). Dominant as to numbers it is also the tallest and largest tree in the Bosque. Some specimens have the immense flanking buttresses, spreading 15-20 feet away from the trunk proper, and extending upwards so high that the clear bole of the tree is not reached until 20 feet from the ground. In the coves made by these buttresses there is an accumulation of humus and half rotten leaves often three to four feet deep, usually crowned by a mass of ferns, Marantaceae, *Selaginella*, and often a few low shrubs of the Melastomaceae with showy pink flowers. With the coves large enough to stable a horse, sometimes a team of them, the tree appears to rise from a great heaping mound of verdure separated by these buttresses, which may extend a long way from the trunk but are usually less than six inches thick, and often only three inches.

The sumaumas, and several other Bombacaceae, together with trees of the Lauraceae Fabaceae, Caesalpiniaceae Caryocaraceae, and perhaps a dozen others make up the topmost tier of the forest canopy. For this forest has two and sometimes three recognizable tiers, a characteristic of the Amazonian rain-forest often noted by Warming, Huber and others. Far up in the uppermost tier are epiphytic aroids, appearing through the binoculars as of the *Dieffenbachia*, *Anthurium* and *Philodendron* type. But enormously greater in numbers of individuals and species are the Bromeliaceae, some of them with showy scarlet and yellow spikes often two or three feet long. Less common are orchids none of which were in flower at this season (January), and no epiphytic cacti of the *Rhipsalis* type appear to be here, perhaps because the forest is so constantly moist. Just how wet



it is may be gleaned from the fact that thrice in the few hours I spent in the Bosque, torrential rains have driven me under one of the thatched arbors, under which most of this has



Sumauma (*Ceiba pentandra*), one of the largest trees in the forest near Pará. A cultivated specimen at the Museu Goeldi, Pará attained a girth of 14 feet in 32 years.

been written to the accompaniment of the roar of the rain and the bombardment of heavy fruits that the wind and rain keep pelting down on the roof.

Among the other epiphytes are many species of Piperaceae, some of the genus *Peperomia* having showy variegated foliage. And one or two Marantaceae seem to be sometimes climbing from the ground and again truly epiphytic. Of course, as to numbers of individuals, the epiphytic flora is easily dominated by filmy ferns, *Selaginella*, and tremendous patches of mosses, so that these cryptogams clothe with green the lower, darker and moister part of tree trunks whose bark is otherwise as smooth and often as light as a young white oak.

This upper and lower stratification of epiphytes seem to be clear reflection of the light and moisture differences between the canopy and the forest floor. The light-demanding and relatively drought-resistant bromeliads and orchids are mostly all up near the canopy, while the moisture-demanding and highly tolerant (in the forestry sense) cryptogams are practically confined to the atmospheric layer on or near the forest floor.

The moisture conditions on this forest floor are, in the absence of instrumental verification, impossible to state. A layer of leaves and humus of unknown depth, but apparently at least two feet thick, soak up the rain, more than half the total yearly amount of which falls during the period of January to May. Not in a steady fall, but in torrential downpours, often six or eight of such occurring in a few hours. These are punctuated by perfectly still periods of sunshine, or of moist almost fog-like cloudiness, and it is during these intervals that the lower strata of the forest seem to reek of warm steaming vapors.

In such an atmosphere vegetation luxuriates, and man, at least at Pará does not seem to suffer much, for the death rate here has not been more than five to the thousand greater than New York during the last twenty years, when malaria and yellow fever were checked.\* The conditions in the real jungle are very much the same, but, of course, the incidence of malaria is much greater while yellow fever is all but unknown there, as it appears to be one of the benefits of civilization.

The forest is hung and festooned with lianes. Weird tales have been written of these curious growths of a tropical forest, some of the more gifted of the writers having endowed them

\* Since writing this there has been an outbreak of yellow fever at Pará.

with man-hunting proclivities of a deadly variety. The nonsense of such statements may perhaps be explained by the fact that at least some of the stories have been written by poor, fever-



Epiphytes in the Bosque at Pará, mostly ferns, aroids, melastomads bromeliads, gesneriads and *Selaginella*.

stricken wretches who ascribed to these innocent climbers not their true function but the impression they made upon the mind of one in no condition to judge. These great woody streamers,



often hanging from the topmost canopy to the ground, some thin as a whip cord, others as thick as a man's body, are a feature of the rain-forest that inspires wonder, and actually they enormously increase the difficulty of getting about. Some of them of the family Clusiaceae and of the Genus *Ficus* are wrapped about the trunks of trees, first in an ineffective rope-like coil, but later in huge tendon-like growths that often strangle their support. Trees in all stages of this strangulation are to be found and sometimes the stranglers are themselves strangled by a new comer. It is small wonder that such vegetatively deadly propensities should have been extended into the idea that lianes were man hunters, The legend still persists here in the minds of those tuned to the miraculous.

The lianes, the density of the forest, the tremendous amount of moisture, the epiphytes, the insects and birds and monkeys that are everywhere,—the over-powering sense of teeming life,—these and the color and gloom of the jungle make of the Amazonian forest a place quite marvellous enough, without the horrors of the imaginative nature fakir. The city of Pará, with quite extraordinary foresight, has captured a bit of that life, preserved it nearly intact, so that the Bosque will always be a place of peculiar interest to visitors.

PARÁ, BRAZIL

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